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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/965,013 Filing Date: September 27, 2001 Appellant(s): BOHRER ET AL.

Brian F. Russell For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 21 May 2008 appealing from the Office action mailed 15 June 2006.

Art Unit: 2145

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

Claims 1, 4-7, 10-15, 18, 19 and 21-23 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,876,668 to Chawla et al. (Chawla) in view of U.S. Patent No. 6,292,834 to Ravi et al. (Ravi). Claim 20 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,876,668 to Chawla et al. (Chawla) in view of U.S. Patent No. 6,292,834 to Ravi et al. (Ravi), and further in view of U.S. Patent No. 6,661,803 Choi et al. (Choi).

(7) Claims Appendix

Art Unit: 2145

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,876,668	CHAWLA	4-2005
6,292,834	RAVI	9-2001
6,661,803	CHOI	12-2003

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

- 1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Page 4

Art Unit: 2145

3. Claims 1, 4-7, 10-15, 18, 19 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chawla et al. (U.S. 6,876,668), hereinafter referred to as Chawla in view of Ravi et al. (US 6,292,834 B1), hereinafter referred to as Ravi.

4. Regarding claim 1, Chawla discloses a method of operating a data processing network, comprising:

performing an initial negotiation (col. 5, II. 20-25, accept first bandwidth request) between a server of the network and a switch to which the server is connected, wherein the initial negotiation establishes an initial operating frequency of a link between the server and the switch (col. 5, lines 20-25 and col. 12, line 61 – col. 13, line 4, allocate to the session the first bandwidth reservation request);

determining an effective data rate of the server based on network traffic communicated over the link (col. 12, line 61 - col. 13, line 4, request bandwidth, if available then requested bandwidth is allocated); and

Chawla teaches the determination of an effective data rate of a current bandwidth of the link and performing subsequent negotiations to establish a modified operating frequency wherein the modified operating frequency is closer to the effective data rate than the initial operating frequency (col. 13, lines 20-24) but does not clearly recite the steps (a) "responsive to determining that the effective data rate is below the capacity of a current bandwidth of the link, performing a subsequent negotiation to establish a modified operating frequency, wherein the modified operating frequency is closer to the effective data rate than the initial operating frequency" and (b) "automatically repeating, at specified intervals during the operation of the network, the

Application/Control Number: 09/965,013

Art Unit: 2145

determination of the effective data rate and the contingent initiation of a subsequent negotiation to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate."

Page 5

- (a) Chawla teaches the determination of an effective bandwidth needed (col. 13, II. 20-24). In related art and in the same field of endeavor, Ravi teaches a method for dynamically adjusting bandwidth rates based on performance characteristics, including a step for determining the possibility to change the effective data rate to below the capacity or decreasing bandwidth of a link as is possible (see column 7 of Ravi, lines 16-25). Ravi therefore teaches the limitation of "responsive to determining that the effective data rate is below the capacity of a current bandwidth of the link, performing a subsequent negotiation to establish a modified operating frequency, wherein the modified operating frequency is closer to the effective data rate than the initial operating frequency." One of ordinary skill in the art at the time of the applicants' invention would have found it obvious to implement the ability to decrease the bandwidth capacity of a link as taught by Ravi in combination with the teachings of Chawla which teaches the dynamic allocation of bandwidth. One of ordinary skill in the art would have been motivated to combine the teachings of Chawla and Ravi in order to create a dynamic allocation of bandwidth method/system wherein it is desirable to provide efficient transmissions of multimedia streams which are deemed quite well known and used very often in the Internet realm.
- (b) Chawla teaches the dynamic allocation of bandwidth (col. 13, II. 20-24) and therefore it deemed implied that the effective data rate would have to be tested in some

Application/Control Number: 09/965,013

Art Unit: 2145

sort of way at some point in time. Ravi teaches and suggests this feature in the environment wherein it is desirable to periodically change and effective bandwidth rate of a link (col. 7, lines 16-25) and shows that this can be done dynamically based on threshold values and bandwidth value calculations (col. 7, lines 35-47) and the ability to decrease which enables the system to go into a conversation mode by reducing bandwidth (col. 9, II. 17-25). Ravi is therefore found to teach the limitation of "automatically repeating, at specified intervals during the operation of the network, the determination of the effective data rate and the contingent initiation of a subsequent negotiation to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate." Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Chawla and Ravi under the same rationale as utilized in the above claim limitation (a).

Page 6

- 5. Regarding claim 4, Chawla and Ravi teach the method wherein the initial and subsequent negotiation are compliant with the IEEE 802.3 standard (Chawla, col. 11, lines 25-36, Chawla teaches the use of wireless networks, IEEE 802.3 is considered just an example of a wireless network).
- 6. Regarding claim 5, Chawla and Ravi teach the method wherein determining the effective data rate includes accumulating information indicative of the amount of network traffic during a specified interval and calculating an effective data rate based thereon (Chawla, col. 13, lines 20-27).
- 7. Regarding claim 6, Chawla and Ravi teach the method further comprising, responsive to determining that the effective data rate is greater than a specified

percentage of the current bandwidth, performing a subsequent negotiation to establish a modified operating frequency, wherein the modified operating frequency is higher than the current operating frequency (Chawla, col. 13, lines 10-20).

Regarding claim 7, Chawla discloses a data processing network, comprising:
 a central switch (col. 13, lines 31-44);

a server device including a processor, memory, and a network interface card connecting the server device to the central switch via a link (col. 13, lines 31-44);

code means for performing an initial negotiation (col. 5, II. 20-25, accept first bandwidth request), wherein the initial negotiation establishes an initial operating frequency of the link (col. 5, lines 20-25 and col. 12, line 61 – col. 13, line 4, allocate to the session the first bandwidth reservation request);

code means for determining an effective data rate of the server based on network traffic communicated over the link (col. 12, line 61 – col. 13, line 4, request bandwidth, if available then requested bandwidth is allocated); and

Chawla teaches the determination of an effective data rate of a current bandwidth of the link and performing subsequent negotiations to establish a modified operating frequency wherein the modified operating frequency is closer to the effective data rate than the initial operating frequency (col. 13, lines 20-24) but does not clearly recite the steps (a) "code means for performing a subsequent negotiation to establish a modified operating frequency responsive to determining that the effective data rate is different than a current bandwidth of the link, wherein the modified operating frequency is closer to the effective data rate than the initial operating frequency" and (b) "code

Application/Control Number: 09/965,013

Art Unit: 2145

means for automatically repeating, at specified intervals during the operation of the network, the determination of the effective data rate and the contingent initiation of a subsequent negotiation to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate."

Page 8

(a) Chawla teaches the determination of an effective bandwidth needed (col. 13, II. 20-24). In related art and in the same field of endeavor, Ravi teaches a method for dynamically adjusting bandwidth rates based on performance characteristics, including a step for determining the possibility to change the effective data rate to below the capacity or decreasing bandwidth of a link as is possible (see column 7 of Ravi, lines 16-25). Ravi therefore teaches the limitation of "code means for performing a subsequent negotiation to establish a modified operating frequency responsive to determining that the effective data rate is different than a current bandwidth of the link, wherein the modified operating frequency is closer to the effective data rate than the initial operating frequency." One of ordinary skill in the art at the time of the applicants' invention would have found it obvious to implement the ability to decrease the bandwidth capacity of a link as taught by Ravi in combination with the teachings of Chawla which teaches the dynamic allocation of bandwidth. One of ordinary skill in the art would have been motivated to combine the teachings of Chawla and Ravi in order to create a dynamic allocation of bandwidth method/system wherein it is desirable to provide efficient transmissions of multimedia streams which are deemed quite well known and used very often in the Internet realm.

Application/Control Number: 09/965,013

Page 9

Art Unit: 2145

(b) Chawla teaches the dynamic allocation of bandwidth and therefore it deemed implied that the effective data rate would have to be tested in some sort of way at some point in time. Ravi teaches and suggests this feature in the environment wherein it is desirable to periodically change and effective bandwidth rate of a link (col. 7, lines 16-25) and shows that this can be done dynamically based on threshold values and bandwidth value calculations (col. 7, lines 35-47) and the ability to decrease which enables the system to go into a conversation mode by reducing bandwidth (col. 9, II. 17-25). Ravi is therefore found to teach the limitation of "code means for automatically repeating, at specified intervals during the operation of the network, the determination of the effective data rate and the contingent initiation of a subsequent negotiation to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate." Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Chawla and Ravi under the same rationale as utilized in the above claim limitation (a).

- 9. Regarding claim 10, Chawla and Ravi teach wherein the initial and subsequent negotiation are compliant with the IEEE 802.3 standard (Chawla, col. 11, lines 25-36, Chawla teaches the use of wireless networks, IEEE 802.3 is considered just an example of a wireless network).
- 10. Regarding claim 11, Chawla and Ravi teach wherein the code means for determining the effective data rate includes code means for accumulating information indicative of the amount of network traffic during a specified interval and calculating an effective data rate based thereon (Chawla, col. 13, lines 20-27).

Art Unit: 2145

11. Regarding claim 12, Chawla and Ravi teach, further comprising, code means for performing a subsequent negotiation to establish a modified operating frequency responsive to determining that the effective data rate is greater than a specified percentage of the current bandwidth, wherein the modified operating frequency is higher than the current operating frequency (Chawla, col. 13, lines 10-20).

- 12. Regarding claim 13, Chawla and Ravi teach the network wherein the initial and subsequent negotiations are initiated by the central switch (Chawla, col. 13, lines 31-44).
- 13. Regarding claim 14, Chawla and Ravi teach the network wherein the initial and subsequent negotiations are initiated by the server device (Chawla, col. 13, lines 31-44).
- 14. Regarding claim 15, Chawla discloses a server device suitable for use in a server cluster, comprising:

at least one processor (col. 13, lines 31-44);

a system memory accessible to the processor (col. 13, lines 31-44);

a network interface card configured to connect the server device to a central switch over a link (col. 13, II. 31-44);

code means for performing an initial negotiation (col. 5, II. 20-25, accept first bandwidth request), wherein the initial negotiation establishes an initial operating frequency of the link (col. 5, lines 20-25 and col. 12, line 61 – col. 13, line 4, allocate to the session the first bandwidth reservation request);

Art Unit: 2145

code means for determining an effective data rate of the server based on network traffic communicated over the link (col. 12, line 61 – col. 13, line 4, request bandwidth, if available then requested bandwidth is allocated); and

Chawla teaches the determination of an effective data rate of a current bandwidth of the link and performing subsequent negotiations to establish a modified operating frequency wherein the modified operating frequency is closer to the effective data rate than the initial operating frequency (col. 13, lines 20-24) but does not clearly recite the steps (a) "code means for performing a subsequent negotiation to establish a modified operating frequency responsive to determining that the effective data rate is different than a current bandwidth of the link, wherein the modified operating frequency is closer to the effective data rate than the initial operating frequency" and (b) "code means for automatically repeating, at specified intervals during the operation of the network, the determination of the effective data rate and the contingent initiation of a subsequent negotiation to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate."

(a) Chawla teaches the determination of an effective bandwidth needed (col. 13, II. 20-24). In related art and in the same field of endeavor, Ravi teaches a method for dynamically adjusting bandwidth rates based on performance characteristics, including a step for determining the possibility to change the effective data rate to below the capacity or decreasing bandwidth of a link as is possible (see column 7 of Ravi, lines 16-25). Ravi therefore teaches the limitation of "code means for performing a subsequent negotiation to establish a modified operating frequency responsive to

Art Unit: 2145

determining that the effective data rate is different than a current bandwidth of the link, wherein the modified operating frequency is closer to the effective data rate than the initial operating frequency." One of ordinary skill in the art at the time of the applicants' invention would have found it obvious to implement the ability to decrease the bandwidth capacity of a link as taught by Ravi in combination with the teachings of Chawla which teaches the dynamic allocation of bandwidth. One of ordinary skill in the art would have been motivated to combine the teachings of Chawla and Ravi in order to create a dynamic allocation of bandwidth method/system wherein it is desirable to provide efficient transmissions of multimedia streams which are deemed quite well known and used very often in the Internet realm.

(b) Chawla teaches the dynamic allocation of bandwidth and therefore it deemed implied that the effective data rate would have to be tested in some sort of way at some point in time. Ravi teaches and suggests this feature in the environment wherein it is desirable to periodically change and effective bandwidth rate of a link (col. 7, lines 16-25) and shows that this can be done dynamically based on threshold values and bandwidth value calculations (col. 7, lines 35-47) and the ability to decrease which enables the system to go into a conversation mode by reducing bandwidth (col. 9, II. 17-25). Ravi is therefore found to teach the limitation of "code means for automatically repeating, at specified intervals during the operation of the network, the determination of the effective data rate and the contingent initiation of a subsequent negotiation to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate." Therefore, it would have been

Art Unit: 2145

obvious to one of ordinary skill in the art to combine the teachings of Chawla and Ravi under the same rationale as utilized in the above claim limitation (a).

- 15. Regarding claim 18, Chawla and Ravi teach the device wherein determining the effective data rate includes accumulating information indicative of the amount of network traffic during a specified interval and calculating an effective data rate based thereon (Chawla, col. 13, lines 20-27).
- 16. Regarding claim 19, Chawla and Ravi teach the device further comprising, responsive to determining that the effective data rate is greater than a specified percentage of the current bandwidth, performing a subsequent negotiation to establish a modified operating frequency, wherein the modified operating frequency is higher than the current operating frequency (Chawla, col. 13, lines 10-20).
- 17. Regarding claim 21, Chawla discloses a computer program product comprising: computer executable instructions, stored on a computer readable medium, for conserving energy in a data processing network having a switch, a server, and a link connecting the switch to the server (col. 13, lines 31-44), the instructions comprising:

instructions for detecting that the link is underutilized including instructions for determining that a capacity of a current bandwidth of the link is greater than an effective data rate of the link (col. 12, line 61 – col. 13, line 4, request bandwidth, if available then requested bandwidth is allocated).

Chawla teaches the determination of an effective data rate of a current bandwidth of the link and performing subsequent negotiations to establish a modified operating frequency wherein the modified operating frequency is closer to the effective

Art Unit: 2145

data rate than the initial operating frequency (col. 13, lines 20-24) but does not clearly recite the steps (a) "instructions for responding to said detecting by reducing an operating frequency of the link" and (b) "instructions for automatically repeating, at specified intervals, said instructions for detecting and said instruction for responding to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate."

- (a) Chawla teaches the determination of an effective bandwidth needed (col. 13, II. 20-24). In related art and in the same field of endeavor, Ravi teaches a method for dynamically adjusting bandwidth rates based on performance characteristics, including a step for determining the possibility to change the effective data rate to below the capacity or decreasing bandwidth of a link as is possible (see column 7 of Ravi, lines 16-25). Ravi therefore teaches the limitation of "instructions for responding to said detecting by reducing an operating frequency of the link." One of ordinary skill in the art at the time of the applicants' invention would have found it obvious to implement the ability to decrease the bandwidth capacity of a link as taught by Ravi in combination with the teachings of Chawla which teaches the dynamic allocation of bandwidth. One of ordinary skill in the art would have been motivated to combine the teachings of Chawla and Ravi in order to create a dynamic allocation of bandwidth method/system wherein it is desirable to provide efficient transmissions of multimedia streams which are deemed quite well known and used very often in the Internet realm.
- (b) Chawla teaches the dynamic allocation of bandwidth and therefore it deemed implied that the effective data rate would have to be tested in some sort of way at some

Art Unit: 2145

point in time. Ravi teaches and suggests this feature in the environment wherein it is desirable to periodically change and effective bandwidth rate of a link (col. 7, lines 16-25) and shows that this can be done dynamically based on threshold values and bandwidth value calculations (col. 7, lines 35-47) and the ability to decrease which enables the system to go into a conversation mode by reducing bandwidth (col. 9, II. 17-25). Ravi is therefore found to teach the limitation of "instructions for automatically repeating, at specified intervals, said instructions for detecting and said instruction for responding to automatically and periodically modify the operating frequency to a lowest operating frequency compatible with the effective data rate." Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Chawla and Ravi under the same rationale as utilized in the above claim limitation (a).

- 18. Regarding claim 22, Chawla and Ravi teach the computer program product further comprising instructions for determining the effective data rate of the link, wherein the effective data rate is indicative of an amount of data traversing the link during a specified interval (Chawla, col. 13, lines 20-27).
- 19. Regarding claim 23, Chawla and Ravi teach the computer program product further comprising:

instructions for detecting that the link is over-utilized include instructions for determining that a current bandwidth of the link is less than an effective data rate of the link (Chawla, col. 13, lines 20-24); and

instructions for responding to said detecting that think link is over-utilized by increasing an operating frequency of the link (Chawla, col. 13, lines 27-30).

Art Unit: 2145

20. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chawla and Ravi in view of Choi et al. (U.S. 6,661,803), hereinafter referred to as Choi.

21. Regarding claim 20, Chawla and Ravi teach the connection of a client to a server switch and the ability to adjust the bandwidth on the connection dynamically, however does not explicitly disclose the bandwidth being controlled specifically by a clock and clock signals. However, Choi discloses a system wherein a network switch includes a control signal method which controls bandwidth allocation and adjustment (see col. 6, lines 1-6). One of ordinary skill in the art at the time of the applicant's invention would have found it advantageous to combine the method of adjusting bandwidth dynamically between a client and a server switch as taught by Chawla and Ravi and the method of controlling bandwidth through the use of control signals and clock signals, as disclosed by Choi. One of ordinary skill in the art would have been motivated to make such a combination because clock signals are commonly used in the art, as disclosed by Choi, and because Chawla, Ravi and Choi are highly related in the networking arts, due to the fact that they both disclose the desire to control the bandwidth of a connection (see Chawla, col. 13, lines 20-30 and Choi, col. 6, lines 1-14).

(10) Response to Argument

Claims 1, 4-7, 10-15, 18, 19 and 21-23

With respect to the rejection of independent claim 1 and similar independent claims 7, 15 and 21 under 35 USC 103(a) as being unpatentable over Chawla et al. (U.S. 6,876,668) in view of Ravi et al. (US 6,292,834 B1), the appellant argues that (A) the proposed combination of Chawla and Ravi does not disclose "determining an

Art Unit: 2145

effective data rate of the server based on network traffic communicated over the link" and (B) the proposed combination of Chawla and Ravi does not disclose "responsive to determining that the effective data rate is below the capacity of a current bandwidth of the link, performing a subsequent negotiation to establish a modified operating frequency, wherein the modified operating frequency is closer to the effective rate than the initial operating frequency."

- (A) With respect to the appellant's argument that the cited art does not teach "determining an effective data rate of the server based on network traffic communicated over the link", the examiner respectfully disagrees. The examiner submits that at least what is taught by the Chawla patent is within the scope of the claim limitation. Chawla teaches the determination of an effective data rate based on network traffic communicated over a link wherein Chawla teaches in column 12, line 61 column 13, line 4 wherein it is determined if a requested resource (i.e. 100 Kbps bandwidth) is available. Therefore, the communication link is tested to adequately determine whether an effective data rate, in this embodiment 100 Kbps bandwidth, is actually available. If available, the requested bandwidth is negotiated and granted. Therefore, Chawla at least teaches determining of an effective data rate (i.e. allocate 100 Kbps bandwidth) based on network traffic communicated over a link (i.e. determine that the requested resource is available for use).
- (B) With respect to the appellant's argument that the cited art does not teach "responsive to determining that the effective data rate is below the capacity of a current bandwidth of the link, performing a subsequent negotiation to establish a modified

Art Unit: 2145

operating frequency, wherein the modified operating frequency is closer to the effective rate than the initial operating frequency", the examiner respectfully disagrees. Chawla teaches in column 13. lines 20-24 the determination of an effective bandwidth needed for an application. Chawla is not relied upon for the remaining limitation. Ravi is relied upon for teaching this aspect of the claim. The appellant has failed to consider the references in combination. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The examiner submits that the rejection should be maintained in view of Chawla and Ravi as set forth in the above rejection. Specifically, Ravi teaches, in column 7, lines 16-25, a method for dynamically adjusting bandwidth rates based on performance characteristics, including a step for determining the possibility to change the effective data rate to below the capacity or decreasing bandwidth of a link as is possible. Ravi therefore teaches the limitation of "responsive to determining that the effective data rate is below the capacity of a current bandwidth of the link, performing a subsequent negotiation to establish a modified operating frequency, wherein the modified operating frequency is closer to the effective data rate than the initial operating frequency." One of ordinary skill in the art at the time of the applicants' invention would have found it obvious to implement the ability to decrease the bandwidth capacity of a link as taught by Ravi in combination with the teachings of Chawla which teaches the dynamic allocation of bandwidth. One of ordinary skill in the

Art Unit: 2145

art would have been motivated to combine the teachings of Chawla and Ravi in order to create a dynamic allocation of bandwidth method/system wherein it is desirable to provide efficient transmissions of multimedia streams which are deemed quite well known and used very often in the Internet realm.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Art Unit: 2145

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Benjamin Ailes

/BAA/

/Andrew Caldwell/ Supervisory Patent Examiner, Art Unit 2142

Conferees:

/Andrew Caldwell/ Supervisory Patent Examiner, Art Unit 2142

/Jason D Cardone/ Supervisory Patent Examiner, Art Unit 2145